DEFINITION OF TERMS

ADJUVANTS: This is any substance in herbicide formulation or added to spray tank or improve herbicide activities or application characteristics.

A CARRIER is a substance (gas, liquid or solid) used to dilute or suspend a herbicide during its application..

SURFACTANTS: this is a material which improves the emulsifying, dispersing, spreading, wetting or other surface modifying properties of liquid.

EMULSIFYING AGENTS (EMULSIFIERS)

These are chemicals that improve the suspension of particles of one liquid in another liquid. They are also referred to as emulsifiers.

WETTING AGENTS

Wetting agents are surface active agents that reduce the interfacial tension as well as improving the contact between a liquid and surface on which it is applied.

STICKERS: These are spreaders which also reduce the surface tension of other liquid and decrease the possibility of aqueous solution to form discreet droplets.

DETERGENTS: They are cleansing chemicals used mainly for cleaning equipment/sprayers.

HERBICIDE FORMULATION

This is a process by which pure chemicals (e.g.) the active ingredient of a herbicide is prepared and made available for use in a form that will improve handling, storage, application, efficacy and safety.

In order to produce a good commercial herbicide, the formulation chemist must try to maintain a good chemical additives such as emulsifiers, wetting agents and inert materials to make a new herbicide formulation.

Reasons why herbicides are formulated:

- To reduce the concentration of the active ingredient through dilution in appropriate solvent.
- To make the pure chemical available in a form that will permit uniform distribution of target.
- To reduce the level of contamination and hazard during handling and application.
- To improve the efficacy of the herbicide through slow release of the active ingredient.
- Better protection from degradation.
- Greater uptake by the weed.
- To reduce cost of weed control with that particular herbicide. For example, the choice of wettable powder over emulsifable concentrate and vice-versa may be, based to a large extent on which of the formulation is easy to produce and market

Types of herbicide formulation

- **Water soluble (WSC, SL)**
- **Emulsifiable concentrate (EC)**
- **Wettable powder (WP)**

- **Flowable formulation (FW, F)**
- **Granular Formulations (G)**
- **Water Dispersible Granules (EDG, SG, DG)**
- **Salts**
- **Pellets**
- **Microencapsulation**

WEED CONTROL IN CROPPED AND NONCROPPED LANDS

Name of crop	Hand weeding (WAP)	Herbicide application	Rate of application (kg a.i./ha)	Time of application
CEREAL CROPS				

Maize (*Zea mays)*	2-3 and 5-7	1.atrazine + alachlor 2.atrazine + metolachlor 3.atrazine + pendimethalin	3.0 3.0 2.0+2.0	PE PE PE

Name of crop	**Hand weeding (WAP)**	**Herbicide application**	**Rate of application (kg a.i./ha)**
Cowpea (*Vigna unguiculata)*	**2-3 and 6-8**	**pendimethalin + imazaquin** **metolachlor + imazaquin** **trifluralin**	**1.5+0.2** **1.25+0.2** **1.0-1.5**

Leguminous crops

Name of crop	Hand weeding (WAP)	Herbicide application	Rate of application (kg a.i./ha)	
Cowpea (*Vigna unguiculata)*	2-3 and 6-8	pendimethalin + imazaquin metolachlor + imazaquin trifluralin	1.5+0.2 1.25+0.2 1.0-1.5	

Vegetable crops

Name of crop	Hand weeding (WAP)	Herbicide application	Rate of application (kg a.i./ha)	

Tomato *(Lycopersicum esculentum*)	**2-3 and 6-8**	**Metribuzin** **Diphenamide** **Napropamide**	**0.25 - 0.35** **4.0 – 5.0** **1.0 – 2.0**	

Root and Tuber crops

Name of crop	Hand weeding (WAP)	Herbicide application	Rate of application (kg a.i./ha)	
Cassava *(Manihot esculentus*	**3, 8 and 12**	**atrazine + pendimethalin** **atrazine + metolachlor (Primextra)**	**3.0** **3.0**	

AQUATIC WEEDS

Name of weed	Herbicide	Rate (kg ai)

Most weeds	**fluoridone**	**0.6 – 4.5**
Water hyacinth	**diquat**	**0.5 – 0.7**
Salvinia spp.	**Diquat** **2.2,4-D**	**0.9 – 1.8** **3.6 (apply to surface)**

WEED CONTROL IN LANDSCAPE

- **Weed control options in landscape include:**
- **hand weeding**
- **Cultivation**
- **mowing**
- **Mulching**
- **Use of herbicides e.g. glyphosate, oxadiazinon (Ronsta) and oxyfluorfen (Goal).**

ROADSIDE AND ESTATE WEED CONTROL

- **Strip of vegetation by the road side and around buildings constitutes roadside weeds.**
- **Such weeds should be controlled at less cost.**
- **Regular hand weeding will control most weeds.**

use of non - selective post emergence herbicides (e.g. glyphosate or amitrole) will give a satisfactory weed control.